IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellant:	Paul R. Schimmel	Appeal Nos.	2003-1335 and 1997-2396
Serial No.:	08/249,689	Art Unit:	1631
Filed:	May 26, 1994	Examiner:	J. Brusca
For:	*"DESIGNING COMPOUNDS SPECIFICALLY INHIBITING RIBONUCLEIC ACID FUNCTION"*		

Board of Patent Appeals and Interferences
Washington, D.C. 20231

REQUEST FOR REHEARING OF DECISION BY BOARD OF PATENT APPEALS AND INTERFERENCES

Sirs:

Appellant requests rehearing of the decision by the Board of Patent Appeals and Interferences mailed July 20, 2006. It is believed that no fee is required. However, should a fee be required, the Commissioner is hereby authorized to charge the additional fees to Deposit Account No. 50- 3129.

I. Brief History of Appeals in this Application.

This application was originally filed May 26, 1994, claiming priority as a continuation to U.S.S.N. 07/586,534 filed September 21, 1990. The examiner's rejection of the claims under 35 U.S.C. § 112 as lacking enablement was originally appealed August 19, 1996. A decision in appeal 1997-2396, mailed on April 30, 2001, by the Board of Appeals reversed the rejection of the method and composition claims under 35 U.S.C. § 112, finding the claims enabled, upheld the double patenting rejection over the

related case, 07/929,834 filed August 14, 1992, issued September 3, 2002 as U.S. Patent No. 6,446,032, and made a new rejection under 35 U.S.C. § 112, written description. The Board of Appeals' decision in Appeal 1997-2396, held that, while the factors relied on by the examiner are relevant in determining enablement by the specification, they were insufficient to establish that the experimentation required to practice the claimed invention was undue. The examiner's rejection of claims 1 and 3 through 21 for lack of enablement under 35 U.S.C. § 112, first paragraph, was reversed. Under the provisions of 37 C.F.R. § 1.196(b), the Board of Appeals entered a new ground of rejection under the first paragraph of 35 U.S.C. § 112 on the basis that the specification failed to provide an adequate written description for composition claims 11 through 13, 17 through 19 and 21.

In response to the Board of Appeals' decision dated April 30, 2001, Appellant amended base claim 11, and claims dependent thereon, to more clearly define the composition as a compound that is complementary to the target RNA sequence comprising hydrogen bond donor and acceptor sites. Lines 29-17, bridging pages 38 and 39, for example, provide support for these amendments. A Terminal Disclaimer was also filed.

The examiner rejected the amended composition claims as lacking written description. Appellant submitted argument and factual and expert evidence. The examiner maintained the rejection. The examiner's final rejection of composition claims 11-13, 17-19 and 21 under 35 U.S.C. § 112, as lacking written description was appealed to the Board of Appeals on June 10, 2002. On October 30, 2003, the Board of Appeals affirmed the rejection in part and reversed in part and the case was again remanded to the examiner.

One year later, on October 14, 2004, the examiner mailed Appellant a copy of the examiner's request for rehearing of the October 30, 2003, decision including a memo dated October 2, 2004, from the Directors of Technology Center 1600. The request for rehearing was allegedly based on *Univ. of Rochester v. G.D. Searle & Co.,* 358 F.3d 916, 69 USPQ2d 1886 (Fed. Cir. 2004). *Univ. of Rochester* was decided on February 13, 2004, four months after the October 30, 2003, decision by the Board of Appeals.

On November 12, 2004, Appellant submitted a Response to the Request for Rehearing submitted by the examiner. The Response to the Request for Rehearing pointed out factual errors in the Request for Rehearing and explained how the October 30, 2003 decision by the Board of Appeals was consistent with the Federal Circuit's decision in *Univ. of Rochester*, especially considering the differences in the facts of the two cases. There is no evidence this response was considered, nor was Appellant advised that such a response was allowed or would be considered.

Nonetheless, the Board of Appeals remanded the application to the examiner in a decision mailed on September 19, 2005. The Board of Appeals remanded the case to the examiner for the examiner's analysis of the declarations of Drs. Rebek and Williamson, the examiner's views on Appellant's response to the request for rehearing, and for an explanation of the relevance of the *Univ. of Rochester* decision.

The examiner's response to the remand was mailed on December 23, 2005. The response does not provide any analysis of the evidence. On January 23, 2006, Appellant filed a Reply to the Response to Remand. Again, there is no evidence that this response was considered nor was Appellant advised that it would be given an opportunity to respond.

On July 20, 2006, the Board mailed its decision granting the rehearing and affirming the rejection of claims 17-19.

The allowed method claims are not on appeal, and regardless of the decision in this application, the patent should issue with the method claims.

II. Basis for Request for Rehearing.

The request should be granted for any one of the following reasons:

This appeal and request for reconsideration was procedurally improper. There are two basis for this:

The decision was not made based on the claims as they were amended following the second decision by the Board.

The Examiner, the Group Art Unit, and the Board of Patent Appeals has failed to follow its procedural rules regarding time and opportunity to respond.

The request completely ignores the extensive file history and evidenced reviewed by the Board of Patent Appeals in rendering either of the first two decisions in this case.

The Board has failed to apply the evidence in the file in making its legal analysis.

The Board's decision should be revised in view of an intervening decision by the Federal Circuit Court of Appeals, *Falkner v. Inglis*, 448 F.3d 1357, 79 USPQ2d 1001 (Fed. Cir. 2006).

III. Status of Claims.

The decision of the Board mailed on July 20, 2006, notes that although Appellant amended the claims after the October 30, 2003 decision, the amended claims were not before the Board. Thus, the July 20, 2006, decision affirmed the rejection of claims 17-19 as presented in the Substitute Brief submitted on December 9, 2002. Due in part to

the procedural irregularities, the status of the claims is unclear. Because the amended claims were apparently not before the Board at the time of the Decision, Appellant includes claims 17-19 as presented in the Substitute Brief submitted on December 9, 2002, as well as the claims as amended on December 24, 2003.

A. Claims 11, 12, and 17-19 as Presented in the Substitute Brief.

The claims in issue as presented in the Substitute Brief are as follows:

11. A complementary compound comprising hydrogen bond donor and acceptor sites arranged to specifically bind and inhibit the function of a targeted RNA molecule, wherein the compound is specifically directed to and binds to a critical region of the of the RNA molecule, located within the minor groove of the RNA molecule, identified by a combination of the primary, secondary and tertiary structure of the critical region.

12. The complementary compound of claim 11, wherein the RNA is selected from the group consisting of mRNA, tRNA, rRNA, and viral RNA.

17. The complementary compound of claim 12 wherein the compound binds to a critical region within the minor groove of the acceptor stem of a tRNA molecule.

18. The complementary compound of claim 17 wherein the tRNA molecule is $tRNA^{Ala}$.

19. The complementary compound of claim 17 wherein the critical region is the G3:U70 base pair.

B. Claims as Amended on December 24, 2003.

Claims 1, 3, 4, 5, 6, 7, 8, 9, 10, 14, 15, 16, and 20 are pending and allowed.

Claim 11 was amended on December 24, 2003, to incorporate the language of claim 17, which was found to comply with the requirements of 35 U.S.C. § 112 by the Board of Appeals in its decision issued October 30, 2003. Claims 13, 18, 19 and 21 depend from claim 11.

Claims 2, 12 and 17 have been cancelled.

The claims in issue are as follows:

11. A complementary compound comprising hydrogen bond donor and acceptor sites arranged to specifically bind and inhibit the function of a targeted RNA molecule, wherein the compound is specifically directed to and binds to a critical region within the minor groove of the acceptor stem of a tRNA molecule, identified by a combination of the primary, secondary and tertiary structure of the critical region.

13. The complementary compound of claim 11 further comprising a pharmaceutically acceptable carrier selected from the group consisting of pharmaceutically acceptable compositions for topical administration, pharmaceutically acceptable compositions for parenteral administration, pharmaceutically acceptable compositions for parenteral administration, and combinations thereof.

18. The complementary compound of claim 11 wherein the tRNA molecule is $tRNA^{Ala}$.

19. The complementary compound of claim 11 wherein the critical region is the G3:U70 base pair.

21. The complementary compound of claim 11 wherein the compound is a nucleic acid and the compound is synthesized *in vivo* from a retroviral vector.

IV. Procedural Irregularities.

A. Action Following Decision by the Board.

After decision by the Board, the application is to be returned to the examiner, subject to appellant's right of appeal or other review, for such further action by appellant or by the examiner, as the condition of the proceeding may require, **to carry into effect the decision**. 37 C.F.R. § 1.197(a) now § 41.54, and MPEP § 1214.06. The October 30, 2003, decision of the Board affirmed the rejection of claims 11-13 and 21 as lacking adequate written description and reversed the rejection with respect to claims 17-19.

37 C.F.R. § 1.196(b)(2), now § 41.50(b)(1), provides that the application will be remanded to the examiner for reconsideration if the appellant submits "an appropriate amendment" of the claims rejected by the Board, or new evidence relating to the claims so rejected, or both. An amendment is "appropriate" under the rule if it amends one or more of the claims rejected, or substitutes new claims to avoid the art or reasons adduced by the Board. *Ex parte Burrowes*, 110 O.G. 599, 1904 C.D. 155 (Comm'r Pat. 1904).

On December 24, 2003, Appellant submitted an appropriate amendment amending rejected claim 11 to incorporate the elements of allowable claim 17. The dependencies of claims 18 and 19 were amended to depend from amended claim 11. The amendment effectively cancelled the rejected claims. Upon entry of the amendment, all pending claims were allowable. In a Communication mailed on March 22, 2005, the examiner indicated that the amendment was entered and the application was forwarded to the Board of Appeals. The examiner should have acted on the amendment, or the Board of Appeals should have remanded the application to examiner so that the examiner could act on the amendment. Jurisdiction over an application passes to the examiner after a

decision by the Board of Patent Appeals and Interferences to carry into effect the decision of the Board of Patent Appeals and Interferences. Because the amended claims were all allowable, the examiner should have issued a Notice of Allowability.

Instead, the examiner filed a Request for Rehearing on October 14, 2004, almost one year from the October, 30, 2003 decision. The Request for Rehearing was allegedly based on an intervening Federal Circuit Court of Appeals decision, *Univ. of Rochester v. G.D. Searle & Co.*, 358 F.3d 916, 69 USPQ2d 1886 (Fed. Cir. 2004) decided on February 13, 2004, four months after the October 30, 2003, decision by the Board of Appeals. Not only was this request untimely, but it failed to provide notice or opportunity by Appellant to respond.

This delay fails to comply with the rules promulgated by the U.S. Patent Office in the Manual of Patent Examining Procedure, as follows.

MPEP 1214.04 Examiner Reversed

> A complete reversal of the examiner's rejection brings the case up for immediate action by the examiner. If the reversal does not place an application in condition for immediate allowance (e.g., the Board has entered a new ground of rejection under 37 CFR 41.50(b)), the examiner should refer to the situations outlined in MPEP § 1214.06 for appropriate guidance.
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> The examiner should never regard such a reversal as a challenge to make a new search to uncover other and better references. This is particularly so where the application or ex parte reexamination proceeding has meanwhile been transferred or assigned to an examiner other than the one who rejected

the claims leading to the appeal. The second examiner should give full faith and credit to the prior examiner's search.

If the examiner has specific knowledge of the existence of a particular reference or references which indicate nonpatentability of any of the appealed claims as to which the examiner was reversed, he or she should submit the matter to the Technology Center (TC) Director for authorization to reopen prosecution under 37 CFR 1.198 for the purpose of entering the new rejection. See MPEP § 1002.02(c) and MPEP § 1214.07. The TC Director's approval is placed on the action reopening prosecution.

The examiner may request rehearing of the Board decision. Such a request should normally be made within 2 months of the receipt of the Board decision in the TC. The TC Director's secretary should therefore date stamp all Board decisions upon receipt in the TC.

All requests by the examiner to the Board for rehearing of a decision must be approved by the TC Director and must also be forwarded to the Office of the Deputy Commissioner for Patent Examination Policy for approval before mailing.

The request for rehearing must state with particularity the points believed to have been misapprehended or overlooked by the Board. Arguments not raised in the answers before the Board and evidence not previously relied upon in the answers are not permitted in the request for rehearing except upon a showing of good cause, the examiner may present a

new argument based upon a recent relevant decision of either the Board or a Federal Court.

The request should set a period of 2 months for the appellant to file a reply.

If the request for rehearing is approved by the Office of the Deputy Commissioner for Patent Examination Policy, the TC will mail a copy of the request for rehearing to the appellant. After the period set for appellant to file a reply (plus mailing time) has expired, the application file will be forwarded to the Board.

B. Appellant Has Been Harmed By the Lack of Diligence by the USPTO.

The MPEP provides that the examiner may request rehearing of a Board of Appeals' decision, and that such a request should normally be made **within two months** of the receipt of the Board of Appeals' Decision in the Technology Center. MPEP § 1214.05. A request for rehearing filed nearly one year after a decision by the Board of Appeals should never have been permitted because the examiner and technology center failed to act diligently in requesting the rehearing. Indeed, the technology center obviously was not satisfied with the Board's decision and engaged in substantial delay in acting which resulted in significant harm to Appellant. The delays on the part of the USPTO will result in significant loss of patent term on the allowable claims because this application is terminally disclaimed to a previously issued patent.

The examiner should have been limited to filing a request for rehearing within two months of the decision by the Board of Appeals because an appellant is so limited. Granting a request for rehearing filed **a year and four months** after the decision of the

Board of Appeals is an outrageous breach in equity and parity between Appellant's rights and the USPTO. Moreover, the technology center's refusal to timely act on the Board of Appeals' decision is a flagrant disregard for the authority of the Board of Appeals. This is even more so since the undersigned made numerous calls to the Examiner and to the Board regarding the status of this case, so the delay was intentional, not inadvertent.

C. Remanding the Case for a Second Time Twenty-Three Months after a Second Decision by the Board of Appeals is Arbitrary and Capricious.

Decisions of the Board of Appeals are reviewed in federal court under the standards of the Administrative Procedure Act ("APA"). *Falkner v. Inglis*, 448 F.3d 1357, 79 USPQ2d 1001 (Fed. Cir. 2006). Actions of the Board of Appeals will be set aside if they are arbitrary, capricious, an abuse of discretion or otherwise not in accordance with law. Factual findings will be set aside if they are unsupported by substantial evidence. *Id.* The July 20, 2006 decision by the Board of Appeals indicated that the application was remanded to the examiner to further develop issues in the appeal that had not been sufficiently developed on the record, namely a discussion of how the *Univ. of Rochester* decision applies to the application. The Board of Appeals acknowledges considering Appellant's subsequent comments in the Reply to the Response to Remand submitted on January 23, 2005.

Although the Board of Appeals has the authority to remand a case to the examiner when it deems it necessary (MPEP § 1211), this authority should be tempered with due consideration for the rights of an appellant. The Board of Appeals remanded the application to the examiner on September 19, 2005, nearly two years after its October 30, 2003 decision. Not only was the case remanded two years after the October 30, 2003

decision, the case had been in condition for allowance since December 24, 2003, when Appellant amended the claims to conform to the Board of Appeals' October 30 decision.

Appellant relied on the finality of the October 30, 2003, decision and amended the claims to conform with the decision. Allowing the examiner to request a rehearing after more than a year has passed since the date of the decision allows the examiner to undermine the reliability of the Board of Appeals' decisions. Here, the examiner improperly waited for changes in the law that would further the agenda of the technology center. It is grossly unfair that once the Board of Appeals renders a decision, the examiner apparently can wait as long as he or she sees fit before requesting a rehearing. Although the Board of Appeals has discretion to remand a case when it deems necessary, a remand after more than two years can only be considered as exceeding the Board of Appeals' discretion, and injects uncertainty in the appeal process. Moreover, this case by virtue of its age and status as having been twice on appeal was to have been treated special; this too was ignored.

V. The Request and the Decision Ignore the Evidence

Despite the alleged purpose of remanding to the Group following the Request for Rehearing, the request fails to provide any detailed analysis of the evidence Appellant submitted in support of the amended claims, and the decision ignores completely this evidence and the Group's lack of discussion thereon. The examiner's only response is to present argument for why the attorney's argument is wrong; not why the evidence fails to support the decision.

This Board has twice before reviewed this application and very carefully gone through the reams of paper and evidence and heard oral arguments, and then rendered its

decisions. Even though the appellant lost on its broadest composition claims, it responded by significantly amending the claims in view of the careful and well reasoned analysis by the Board, with the expectation this case would be allowed. Then, nearly three years after the second oral hearing, a decision was rendered by a different Board where the decision does not provide a careful analysis of the facts and legal issues before it, but appears to capitulate to the group's argument that the appellant's analogy is incorrect. The Appellant was never given an opportunity in the examining division to respond to this argument, nor at the appellate level. This defeats the entire purpose of an appeal.

VI. Intervening Federal Circuit Decision.

A. *Falkner v. Inglis.*

On May 26, 2006, the Federal Circuit Court of Appeals published a decision clarifying the legal standard for the written description requirement. *Falkner v. Inglis*, 448 F.3d 1357, 79 USPQ2d 1001 (Fed. Cir. 2006). This decision was not considered by the Board of Appeals in its July 20, 2006 decision.

In *Falkner*, the Federal Circuit addressed the issue of written description in an appeal from an interference. The issue was whether the applicant's priority applications adequately described and enabled a poxvirus-based vaccine. The Federal Circuit reiterated that "[t]he 'written description requirement implements the principle that a patent must describe the technology that is sought to be patented; the requirement serves to demonstrate that the patentee was in possession of the invention that is claimed." *Falkner* at 1366. The Federal Circuit also clarified that with regard to the written description requirement: (1) examples are not necessary to support the adequacy of the a

written description; (2) the written description standard may be met even where actual reduction to practice of an invention is absent; and (3) there is no per se rule that an adequate written description of an invention that involves a biological macromolecule must contain a recitation of known structure. *Falkner* at 1366.

1. Examples Are Not Required.

The Federal Circuit reiterated that the absence of examples does not render a written description inadequate. In *Falkner*, the application did not contain examples involving poxivirus as claimed. Instead, the application provided examples using herpesvirus. The Federal Circuit held with regard to the written description requirement it is unnecessary to spell out every detail of the invention in the specification, and that only enough detail must be included to convince the person of skill in the art that the inventor possessed the invention. *Falkner* at 1366.

2. Actual Reduction to Practice is Not Required.

In *Falkner*, the Federal Circuit Court of Appeals affirmed the holding of *Univ. of Rochester* quoting, "We of course do not mean to suggest that the written description requirement can be satisfied only by providing a description of an actual reduction to practice." *Falkner* at 1367. Citing the Supreme Court decision, *Pfaff v. Wells Elecs.*, 525 U.S. 55, 66 (1998), the Federal Circuit noted that proof of reduction to practice is not necessary in every case. *Falkner* at 1367. Indeed, the Federal Circuit pointed out that *Pfaff* makes clear that an invention can be "complete", i.e., is possessed by the inventor, even where an actual reduction to practice is absent. *Id.* Constructive reduction to practice is an established method of disclosure. *Falkner* at 1367, citing *Univ. of Rochester* at 926.

3. Recitation of Known Structure is Not Required.

The Federal Circuit expressly stated in *Falkner* that there is no per se rule that an adequate written description of the invention that involves a biological molecule must contain recitation of known structure. *Falkner* at 1367. The Court also affirmed that

> The descriptive text needed to meet these [written description] requirements varies with the nature and scope of the invention at issue, and with the scientific and technologic knowledge already in existence. The law must be applied to each invention that enters the patent process, for each patented advance is novel in relation to the state of the science. Since the law is applied to each invention in view of the state of relevant knowledge, its application will vary with differences in the state of knowledge in the field and differences in the predictability of the science. *Falkner* at 1367-1368 (Fed. Cir. 2006) *citing Capron v. Eshhar*, 418 F.3d 1349, 1357 (Fed. Cir. 2005).

Although the structure discussed in *Falkner* concerned known DNA sequences, the fact that the Federal Circuit relied on precedent which did not focus on DNA sequences to support its analysis indicates that the holding in *Falkner* is not limited strictly to DNA sequence structure.

B. Application of *Falkner v. Inglis.*

The application of the written description requirements as explained by the Federal Circuit in *Falkner* to the pending claims demonstrates that the Board of Appeals misapplied the written description requirement to the pending claims.

1. The Board of Appeals Improperly Relied On the Absence of Working Examples.

The decision of the Board of Appeals mailed on July 20, 2006, notes that "it is undisputed that the specification does not disclose any examples of the design, synthesis, or testing of compounds that bind to the minor groove of a targeted RNA." (Decision, paragraph bridging pages 9 and10). This is not correct. This is a disputed point.

Appellants clearly demonstrated that modified tRNAs do bind to the minor groove of a targeted RNA.

However, *Falkner* makes clear that no working examples are required. Thus, the Board of Appeals' reliance on the presence or absence of working examples is misplaced. Not only does the Board of Appeals give weight to a factor that the Federal Circuit has expressly ruled is not required, the Board of Appeals misreads the specification. The specification, in particular Examples 5-8 spanning pages 41-46 describe designing and synthesizing the claimed compounds. Thus, contrary to the Board of Appeals' conclusion, the specification does in fact contain examples for the synthesis and design of the claimed compounds even though examples are not required.

2. The Board of Appeals Improperly Relied on the Absence of Actual Reduction to Practice.

With regard to actual reduction to practice, the Federal Circuit in *Falkner* reaffirmed the well established principle that actual reduction to practice is not required to satisfy the written description requirement. Indeed, the Supreme Court has ruled in *Pfaff* that an invention can meet the written description requirements without actual reduction to practice. *Falkner* at 1367 discussing *Pfaff*. Therefore, the Board of Appeals' reliance on the absence of examples showing the testing of the claimed compounds is misplaced because actual reduction to practice is not required to satisfy the written description requirements.

The *Falkner* decision also explained that in contrast to actual reduction to practice, conception is a prerequisite to an adequate written description. *Falkner* at 1367, *citing Fiers v. Sugano*, 984 F.2d 1164, 1171 (Fed. Cir. 1993) ("[O]ne cannot describe what one has not conceived."). As noted above, constructive reduction to practice is an established method of disclosure. *Falkner* at 1367, citing *Univ. of Rochester* at 926. Here, the claimed compounds are, at a minimum, constructively reduced to practice in

view of the detailed guidance provided in the specification for obtaining the claimed compounds.

VII. The Board of Appeals Misapplies the Holding in *Capon v. Eshhar*.

Citing *Capon v. Eshhar*, 418 F.3d 1349, 76 USPQ2d 1078 (Fed. Cir. 2005), the Board of Appeals focused on "the existing knowledge in the particular field" and "the maturity of the science or technology" to determine whether the written description requirements were met (July 20, 2006 Decision, page 6). The Board of Appeals acknowledges on pages 7-8 of the July 20, 2006 decision that the specification provides detailed written description on the structure of transfer RNAs, that critical sites were identified on transfer RNAs, the primary basis for sequence discrimination in RNA is believed to be the minor groove, that the claimed inhibitors can be designed and synthesized using computer modeling in combination with analysis of targeted RNA sequences to design molecules that bind to the targeted RNA by covalent or hydrogen bonding, and that computer modeling can be can be used to screen and graphically depict the claimed compounds. However, the Board of Appeals concluded that "there is no evidence that any of the technology that might have been involved in visualizing and/or designing the claimed RNA inhibitors was similarly "well-developed and mature" at the time of the invention, such that one of ordinary skill in the art would have understood or been able to recognize the claimed inhibitors from a description of the target RNA" (July 20, 2006 Decision, page 10). This is factually incorrect. There is a great deal of evidence both in the application and in the numerous literature submissions as well as declarations that were filed during the prosecution of this application, that the field of RNA and DNA was well developed, with numerous examples of inhibitors binding to the major groove (rather than the minor groove of RNA, but extrapolatable to RNA). By

giving significant weight to only one factor, the Board of Appeals misapplied the holding in *Capon*.

The Federal Circuit held in *Capon* that "the determination of what is needed to support generic claims to biological subject matter **depends on a variety of factors**, such as the existing knowledge in the particular field, the extent and content of the prior art, the maturity of the science or technology, the predictability of the aspect at issue, and other considerations appropriate to the subject matter. *Capon* at 1357, USPQ2d at 1084. The *Capon* decision makes clear that no one factor is dispositive.

VIII. The Specification Meets the Written Description Requirements.

The specification meets the written description requirements as explained by the Federal Circuit.

A. Appellant Possessed the Invention at the Time the Application Was Filed.

To the extent that possession is required to meet the written description requirements, at a minimum, the claimed compounds were constructively reduced to practice at the time the application was filed. As discussed above, the specification contains detailed written description that conveys to one of skill in the relevant art that the inventors were in possession of the claimed compounds. This description is acknowledged by the Board of Appeals on pages 7-9 of the July 20, 2006, decision.

The existing knowledge in the particular field, the extent and content of the prior art, the maturity of the science or technology, the predictability of the aspect at issue, are addressed by the two declarations under 37 C.F.R. § 1.132 by Dr. Jules Rebek and Dr. James R. Williamson. The Declarations were submitted with the response mailed on April 11, 2002. It is undisputed that Drs. Rebek and Williamson are of skill in the relevant art. For example Dr. Rebek states in paragraph 5 of his Declaration that he is an

expert in the field of molecular recognition at the time the application was filed. Dr. Williamson states in paragraph 5 of his Declaration that he is an expert in the field of RNA and drug design at the time the application was filed. Therefore, both declarants understand at the time the application was filed as persons of skill in the art the existing knowledge in the field, the extent and content of the prior art, the maturity of the science of technology, and the predictability of obtaining the claimed compounds at the time the application was filed (see paragraph 5 of each Declaration). For example, Dr. Rebek had published over 300 scientific articles and serves on the editorial board of several journals. The detailed guidance in the specification as well as the two declarations clearly show that considering all the factors articulated in *Capon*, the claimed invention was conceived and described with sufficient detail that one of skill in the art would recognize that the inventors possessed the invention at the time the application was filed considering.

Neither Dr. Rebek nor Dr. Williamson have any financial interest in this application nor received any compensation for their declaration. Dr. Williamson provided his expert opinion. The declarations were submitted in order to provide further evidence that the description of the structure of the critical region in the minor groove of RNA is sufficient to describe the structure of the claimed compound. Each declaration clearly elaborates upon the present specification's discussion of the forces presented in and by the targeted RNA molecule. While these forces establish the structure of the critical region of the RNA in terms of specific and available interactions and geometry, they are a direct result of the RNA sequence (primary structure). Secondary and tertiary structures can subsequently be determined via any number of commercially available programs, as outlined in the submitted declarations.

Dr. Rebek was asked to review the specification and claims, in view of the legal standard for the written description under 35 U.S.C. § 112, to determine if he, as one in

the field, would know what the structure of the claimed compounds was, based on his knowledge, the specification, and the language of the claims. Dr. Rebek specifically addressed the structure of the minor groove of the RNA in responding, reviewing the hydrophobic environment of the minor groove, hydrogen bonding, electrostatic interactions, and geometric and steric constraints. As summarized on page 7, "All of these 'constraints' define the nature of the inhibitory compound in terms of structure and functionality; they define the molecular recognition of the RNA by the compound where the compound is complementary in size, shape and chemical surface to the RNA."

Dr. Williamson is an expert in the field of RNA and drug design, including RNA structure, RNA-protein recognition, and RNA-small molecule interaction. As stated at the top of page 3, he presents "evidence indicating that attractive and repulsive forces present in the critical region of the minor groove of RNA dictate or define the geometrical constraints of the region." These forces, as described in the specification, define the structure of the critical region in a way that provides one with a mental picture of a defined "space" that can only be accessed by a compound of the correct "shape". He also reviews each of the claimed structural features: the hydrophobic environment of the minor groove, the hydrogen bonding, the electrostatic interactions, and the geometic and steric constraints. Dr. Williamson refers to the precedent of compounds that bind to DNA molecules (recognizing that here, the invention is the discovery that the minor groove of RNA is the critical binding site, whereas in DNA it is the major groove), as published by Dervan, et al., in Science 232, 464-471 (1986). Dr. Williamson also provides evidence that the claimed method and compounds were enabled and clearly

described in view of his own subsequent work, published in part by Sultan, et al., Science 288, 107-112 (2000).

B. The Existing Knowledge in the Field Was Sufficiently Developed

The Federal Circuit has repeatedly held that the specification is written for a person of skill in the art. *Falkner* at 1366, citing *LizardTech Inc. v. Earth Resource Mapping, PTY, Inc.* 424 F.3d 1336, (Fed. Cir. 2005) (*citing Union Oil Co. v. Atl. Richfield Co.*, 208 F.3d 989, 997 (Fed. Cir. 2000); *In re GPAC Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995)). A person of skill in the art comes to the patent with the knowledge of what has come before. *Id.* As noted in the declarations discussed above, both Dr. Rebek and Dr. Williamson provide testimony as persons of skill in the art that the specification meets the written description requirement at the time the application was filed (paragraph 5 of each Declaration). Thus, Appellant has provided objective evidence that one of skill in the art could identify compounds binding to the minor groove of RNA with techniques and software available when this application was originally filed. The two declarations establish that the existing knowledge in the field was sufficiently developed or mature such that one of skill in the art would recognize that the inventors were in possession of the claimed compounds. No evidence was provided by the examiner to rebut this evidence in the record.

C. The Present Case is Distinguishable from *Univ. of Rochester.*

In *Univ. of Rochester* the Federal Circuit noted that

> Tellingly, . . . what plaintiff's experts' [sic] do not say is that one of skill in the art would, from reading the patent, understand what compound or compounds--which, as the patent makes clear, are necessary to practice the claimed method--would be suitable, nor would one know how to find such a compound except through trial and error.

Univ. of Rochester, at 925. Here, Appellant has provided exactly what was missing in *Univ. of Rochester*, i.e., testimony from experts that one of skill in the art would recognize that the inventors were in possession of the claimed compounds at the time the application was filed. Thus, *Univ. of Rochester* is distinguishable based on the facts in this case.

Appellant's invention is the discovery that compounds complementary to the minor groove of the acceptor stem of a tRNA molecule can be used to inhibit the activity of the tRNA. The primary, secondary and tertiary structure of the acceptor stem of tRNA molecules, including the minor groove, was known as of the original filing date. The structure of the claimed compounds is defined by this complementarity. The invention is not the structure of the minor groove of tRNA. This was known. The application contains evidence showing that substitution of even a single nucleotide, i.e., even an extremely small structural change, can inhibit the function of the tRNA molecule. The application and subsequently provided information by two experts in the field at the time this application was filed, establishes that one skilled in the art would have known what compounds could be made that would have been complementary to these known tRNA minor groove structures and would be able to predict their structure and form therefrom. Therefore, unlike in *Univ. of Rochester*, where there was no definition of the structure of the claimed compounds, only a functional definition, the claimed compounds in this case are defined by structure and by function, and those skilled in the art have provided unrebutted evidence that they could be obtained and characterized without undue experimentation.

D. The Specification Satisfies the Written Description Requirements Consistent with *Univ. of Rochester.*

Although the present case is distinguishable from *Univ. of Rochester* on the facts, the specification still meets the written description requirements set forth in *Univ. of Rochester*. The Court in *Univ. of Rochester* did not change its previous interpretation of the requirements for compliance with the written description requirement, reiterated shortly before in *Enzo supra*. The Board of Appeals' attention is drawn in particular to the Court's statement in *Univ. of Rochester* at 925, citing again to *Enzo* and stating "in fact, where there might be some basis for finding a written description requirement to be satisfied in a genetics case based on the ***complementariness*** of a nucleic acid and, for example, a protein, that correspondence might be less clear in a non-genetic situation. In *Enzo*, we explained that functional descriptions of genetic material can, in some cases, meet the written description requirement if those functional characteristics are 'coupled with a known or disclosed correlation between function and structure, or some combination of such characteristics.' 323 F.3d at 964 (quoting from the PTO's Guidelines for Examination of Patent Applications Under the 35 U.S.C. 112, P1 "Written Description" Requirement, 66 Fed. Reg. 1099, 1106)." (emphasis added).

Also in contrast to *Univ. of Rochester*, where the Court based part of its finding on the failure of Rochester to present evidence that the ordinary skilled artisan would be able to identify compounds based on a functional description, here Appellant has provided objective evidence that even in the absence of the claimed limitations relating to complementarity to the minor groove of tRNA, one could identify compounds binding to the minor groove of RNA techniques and software available when this application was

originally filed. No evidence was provided by the examiner to rebut this evidence, and there is no reference to it in the Request for Reconsideration.

IX. Conclusion

Appellant respectfully requests that the Board of Appeals reconsider and refuse its grant of the Request for Rehearing, for the foregoing reasons. In addition to the procedural difficulties, the Board of Appeals gave undue weight to the level of maturity of the technical field and did not give proper consideration to the two Declarations submitted by Appellant. The two Declarations establish that the field was sufficiently mature such that one of skill in the art would recognize that the inventors were in possession of the claimed compounds at the time the application was filed because they include statements as persons of skill in the art that the specification satisfies the written description requirements (paragraph 5 of Dr. Williamson's Declaration, and paragraph 5 of Dr. Rebek's Declaration) .

The claims now pending in this application comply with the written description requirement for the same reasons under *Falkner* as well as *Univ. of Rochester* and as they did in the decision rendered October 30, 2003: the claims define compounds complementary (including appropriate hydrogen and other chemical bonds and structure) to the minor groove of the acceptor stem of a tRNA (a structural definition) which are effective to inhibit the function of the tRNA molecules (a functional definition). The application as originally filed provides an abundance of information on the structure of the minor groove of tRNA molecules, evidence that even minor changes to this structure inhibits the function of the tRNA molecules, and methods for making and testing the

claimed compounds. The claims to the methods are allowable. Unrebutted expert evidence has been submitted stating that those skilled in the art would know the structure of the claimed compounds based on the complementarity of the compounds to the minor groove of the RNA.

In summary, the Board of Appeals should return the application to the examiner to allowed the case.

Respectfully submitted,

/Patrea L. Pabst/
Patrea L. Pabst
Reg. No. 31,284

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PABST PATENT GROUP LLP
400 Colony Square, Suite 1200
1201 Peachtree Street
Atlanta, Georgia 30361
(404) 879-2151
(404) 879-2160 (Fax)